AMSAT News Service Weekly Bulletins
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AMSAT NEWS SERVICE
ANS-325

ANS is a free, weekly, news and information service of AMSAT North America, The Radio Amateur Satellite Corporation. ANS reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

Please send any amateur satellite news or reports to:
ans-editor@amsat.org

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SB SAT @ AMSAT $ANS-325.01
CubeSat Launch Includes Amateur Radio Missions

AMSAT News Service Bulletin 325.01
>From AMSAT HQ SILVER SPRING, MD.
November 21, 2010
To All RADIO AMATEURS
BID: $ANS-325.01

A Minotaur-4 launch from the Kodiak Launch Complex in Alaska, managed by Alaska Aerospace Corp. on November 19 lifted seven satellites into a 400 mile high circular orbit.

Four of the satellites will be of interested to amateur radio operators:

+ FASTRAC (science and amateur radio mission)
+ RAX - Radio Aurora eXplorer (science and amateur radio mission)
+ NanoSail-D
+ O/OREOS

FASTRAC
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http://fastrac.ae.utexas.edu/for_radio_operators/overview.php
Status: Beacon copied and decoded after launch.

The FASTRAC mission consists of two satellites built by students at UT-Austin. This mission is divided into two basic phases, both phases relying heavily on the participation of the amateur radio community.

The first phase is the science portion of the mission. During this phase the two satellites will be sharing GPS data as long as they are within range of each other. The GPS data will be processed on board each satellite and then stored in flash memory to calculate

an on-orbit relative navigation solution.

Also, the satellites will be performing attitude determination with the GPS receiver. FASTRAC 1 will be firing the micro-discharge plasma thruster whenever the thrust vector is within 15 degrees of the anti-velocity vector. The data will be relayed to the ground when the satellite is in communication with a ground station. A coordination plan is being developed so that participating amateur radio ground stations can play a major role in collecting this data and relaying it back to the FASTRAC web site.

The second phase of the mission begins by reconfiguring the satellites for use by the amateur radio community. The capabilities of these satellites are governed largely by the functionality of the Kantronics KPC9612-Plus TNC. The satellites will be reconfigured after the primary mission to serve on the APRS network.

	FASTRAC 1 "Sara Lily"	FASTRAC 2 "Emma"
Downlink	437.345 MHz FM	145.825 MHz FM
Beacon	437.345 MHz*	145.825 MHz*
Uplink (1200 Baud)	145.980 MHz FM	435.025 MHz FM
Uplink (9600 Baud)	145.825 MHz FM	437.345 MHz FM

* AX.25 1200 AFSK beacon data format

RAX (Radio Aurora eXplorer)

http://rax.engin.umich.edu/
Status: Beacon copied and decoded after launch.

RAX is a space weather science spacecraft carrying a 9600 baud UHF transceiver that will transmit telemetry in the amateur satellite bands. This mission also consists of a primary scientific experiment with future reconfiguration for amateur radio experimentation.

In the science phase the satellite will use a a radar receiver capable of 1 MHz I/Q sampling of select bandwidths between 400-500 MHz, including the amateur satellite bands.

The primary objective of the mission is to use the onboard radar receiver in conjunction with a powerful radar station in Alaska to study the formation of a plasma anomaly known for causing the scintillation of radio signals in the UHF and higher bands. This scintillation effect is known to inhibit our space radar tracking capabilities and ground-space communications.

The RAX team is looking for amateur ground stations to help acquire RAX's 437.505 MHz beacon during the next few weeks of early launch and continue to help collect telemetry throughout the mission.

The amateur radio phase of the mission is still under development. The RAX team will invite the AMSAT community to get involved with submitting proposals on how the radar receiver could be used for amateur radio

experiments after the primary mission objective is achieved. They will issue a call for proposals which will be posted to the AMSAT-BB in the next few months.

NanoSail-D

http://www.nasa.gov/mission_pages/smallsats/nanosaild.html

NanoSail-D is a test of solar sail mechanism technology. The solar sail is designed to operate predominantly as a drag sail and will

cause it to de-orbit in less than 100 days as a test of small satellite de-orbiting techniques. The amateur radio beacon will transmit a one-half second data signal every 5 seconds on 437.270 MHz. The satellite will operate primarily on battery power because of the short duration of the mission.

O/OREOS
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http://www.nasa.gov/mission_pages/smallsats/oreos/main/index.html
Status: Beacon copied and decoded after launch.

O/OREOS is a biological test spacecraft developed by scientists and engineers at NASA Ames Research Center. O/OREOS is a triple cube spacecraft planned to perform two tests during its 1-year mission. The first experiment will test how microorganisms survive and adapt to the stresses of space; the other will monitor the stability of organic molecules in space. O/OREOS includes an amateur radio beacon operating on 437.305 MHz. This satellite also includes a novel de-orbit mechanism design by a Santa Clara University graduate student.

AX.25 437.305 MHz O/OREOS Beacon decoding information:
http://beacon.engr.scu.edu/BeaconProcessingSystem/OOREOSBeaconDecoding.pdf

If you are able to capture the beacon telemetry, please take the time to file a report at http://beacon.engr.scu.edu/Submission.aspx which is an interface to the Beacon Data Processing System.

An overview of the Kodiak launch can be found on-line at:
http://www.spaceflightnow.com/minotaur/stps26/101112launchpreps/

Photos of the payloads during integration with the launcher can be found on-line at:
http://spaceflightnow.com/minotaur/stps26/101112cleanroom/

[ANS thanks the CubeSat Teams and SpaceFlightNow.com for the above information]

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SB SAT @ AMSAT $ANS-325.02
AMSAT Rolls Out Web Fund Raising Widgets

AMSAT News Service Bulletin 325.02
>From AMSAT HQ SILVER SPRING, MD.
November 21, 2010
To All RADIO AMATEURS
BID: $ANS-325.02

AMSAT-VP Operations Drew Glasbrenner, KO4MA announced AMSAT is now using a new web based fund raising tool on Facebook called Fundrazr along with a web widget from PayPal Labs you can add to other web pages. He hopes this will stimulate additional fund raising support for ARISSat-1 and AMSAT-FOX. He is looking for help rolling these web page widgets out to the public. Both are designed to be spread virally and attract donations from those outside the normal AMSAT circles.

For those with private webpages or blogs, we have a PayPal widget that can also be added to your own webpages and blogs. It has been added to the front page at http://www.amsat.org . Please consider adding it to your own webpages and blogs in a prominent place.

Drew concludes, "I'm proud to announce that the Facebook and PayPal widget campaign has raised $1,000 over the last 48 hours! This is a great first step towards replenishing the funds used in the construc-tion of ARISSat-1, and beginning the design and construction of AMSAT-FOX. Thank you to those who posted the fundraiser to their own pages, and to those who donated."

Drew's Facebook page at http://bit.ly/c861N7 now prominently includes the Fundrazr widget that you can share or post. Drew has also added the PayPal Labs widget on his QRZ.com entry, see: http://www.qrz.com/db/KO4MA or http://www.qrz.com/db/K9JKM

For the FundRazr app on Facebook, go to Drew's Facebook page and click share. For the PayPal widget on all other web sites, use the "add to site" button. It will prompt you how to do it. It also lets AMSAT see who and where it has been posted, and how much money has been raised from each location.

Please let Drew know if you add either of these so he can track results! (e-mail: ko4ma@amsat.org)

[ANS thanks Drew, KO4MA for the above information]

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SB SAT @ AMSAT $ANS-325.03
FUNCube Comes to Life at Martlesham, First Command & Telemetry Success

AMSAT News Service Bulletin 325.03
>From AMSAT HQ SILVER SPRING, MD.
November 21, 2010
To All RADIO AMATEURS
BID: $ANS-325.03

The UK Martlesham Microwavers Round Table weekend also included an AMSAT-UK FUNCube developer meeting. The aim of the working session was to build a `stack' of the various boards which will make up FUNcube and see if they worked!

Congratulations are in order to the FUNCube team being able to report success on these milestones:

+ Prove that we could command the satellite remotely via RF.
+ Receive and examine the telemetry from the stack remotely using the FUNcube dongle.
+ Command the antennas to deploy.
+ Command the satellite to change modes between transponder mode to education mode, and back again.

The main 'new' PCBs that arrived were David's PA, Wouter's RF board, and the CCT board from Jason and his team.

Photos of the meeting and FUNCube construction and testing videos can be viewed on-line at: http://funcube.org.uk/working-meetings/cubesat-mtg-1314-nov-2010/

A screenshot of the first captured telemetry from FUNCube can be seen on-line at: http://www.funcubedongle.com/?p5

The Spectravue plot to the right shows the satellite's downlink received

using a FUNcube Dongle. To the right hand side of the plot, the solid green `hump' is the telemetry and the signal to the right of that being

simultaneous transponded SSB voice traffic.

To the bottom left, old hands will recognise the AO-40RCV window being used to decode raw frames. The basic telemetry specification is based heavily on AO-40's FEC model.

[ANS thanks the AMSAT-UK FUNCube developers and Howard, G6LVB for the above information]

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SB SAT @ AMSAT $ANS-325.04
WAS-Satellite Certificate Now Accepted as Credit for AMSAT Awards

AMSAT News Service Bulletin 325.04
>From AMSAT HQ SILVER SPRING, MD.
November 21, 2010
To All RADIO AMATEURS
BID: $ANS-325.04

AMSAT Director of Contests and Awards Bruce Paige, KK5DO says congratulations are in order for these radio amateurs who earned operating awards this month:

The following have entered into the Satellite Communicators Club for making their first satellite QSO:
Club Station, SP9PEX
Rick Tejera, K7TEJ
Merle Olmsted, AA4QE
Zachary Beougher, KD8KSN
George Heath, KF5IRG
Anthony Sirianni, Sr., KD8OEE

The following have earned the AMSAT Communications Achievement Award:
Ronald Oldham, N8RO #521
Ryan Case, KB9RID #522
Merle Olmsted, AA4QE #523
Zachary Beougher, KD8KSN #524

The following have earned the South Africa AMSAT Communications Achievement Award:
Ronald Oldham, N8RO #US152
Bob Herrell, AJ5C #US153
Ryan Case, KB9RID #US154
Merle Olmsted, AA4QE #US155
Zachary Beougher, KD8KSN #US156

The following have earned the AMSAT Sexagesimal Award:
Ronald Oldham, N8RO #154
Zachary Beougher, KD8KSN #155
Bob Herrell, AJ5C #156
Terry Moorby, VE3DIJ #157

The following have earned the AMSAT Century Club Award:
Nick Kucij, KB1RVT #40

The following have earned the W4AMI 5000 Satellite Communications Achievement award:
Zeljko Ulip, 9A2EY #25

Bruce also said that in some cases he can credit holders of the ARRL Worked All States (with the Satellite endorsement) toward appropriate AMSAT Satellite Operating Awards. He will accept a scanned copy of your

Worked All States-Satellite certificate as proof of 50 of the 60 contacts to fill in the missing states for the AMSAT Sexagesimal Award or to qualify for the AMSAT Communication Achievement Award. Contact Bruce via e-mail (kk5do@amsat.org) with your specific details to see if you qualify.

Unfortunately, the ARRL W.A.S. certificate cannot be used towards the South Africa AMSAT Award. As all contacts for this award must be done on

LEO satellites, there is no way to determine if LEO or HEO was used on the certificate.

Full information on all of the AMSAT Satellite Operating Awards can be found on-line at: http://www.amsat.org/amsat-new/awards/

[ANS thanks Bruce Paige, KK5DO for the above information]

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SB SAT @ AMSAT $ANS-325.05
FO-29 Returns to Service

AMSAT News Service Bulletin 325.05
>From AMSAT HQ SILVER SPRING, MD.
November 21, 2010
To All RADIO AMATEURS
BID: $ANS-325.05

Mineo Wakita, JE9PEL reported that the FO-29 Command Team succeeded in bringing FO-29 back in service on 07:46UTC, 16 Nov 2010. Good signals have been reported. Rick, WA4NVM reported, "I caught Kerry, WC7V with a booming signal at 2 degrees elevation. Its nice to hear this bird again!"

Two weeks ago, Yutaka Murata, JA1COU reported that the JARL FO-29 command team hypothesized that recent shutdowns of the satellite may have been caused when the temperature aboard FO-29 became too high to allow continuous operations and to accept commands or any other satellite operations.

The FO-29 command team expected that the temperature aboard FO-29 would drop as the length of eclipse increases:

Eclipse of FO-29 is:
November 1   0% (full illumination)
November 20 14%
November 30 17%

[ANS thanks Mineo Wakita, JE9PEL and Yutaka Murata, JA1COU for the above information]

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SB SAT @ AMSAT $ANS-325.06
Satellite Shorts From All Over

AMSAT News Service Bulletin 325.06
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+ An article and accompanying video on the SouthGate Site shows how terrestrial operation can impact satellite operations when the operators unwisely choose their frequency: http://tinyurl.com/24r4bdx (SouthGate)

+ Congratulations to Loren, K7CWQ on being awarded Satellite WAS #323 from the ARRL. His first contact was on 11-6-2009 with K8YSE. All of his contacts have been with an HT and an Arrow antenna from his driveway.

+ NASA and the National Institute of Aerospace have launched a new planetary rover engineering competition called Exploration Robo-Ops Student Challenge. University teams are eligible to win as much as $10,000 for designing and building a planetary rover. Teams are required to submit a project plan proposal by Dec. 15. More info can be found at SpaceDaily.com http://tinyurl.com/28nsglr

+ Tom, W5KUB was on Memphis, TN Channel 5 news with his amateur radio contact with the ISS. Video at http://tmedlin.com/iss.wmv

+ ReadySat Go is a store-and-forward CubeSat being developed by students at San Jose State University. They have posted a video showing construction of the satellite on the SouthGate site: http://tinyurl.com/274f7wq

+ NASA's Eyes on the Solar System is a browser application that gives you a 3D environment operating in real time, so you can virtually tag along with our robot spacecraft. More information and the stuff you need to download can be found at: http://solarsystem.nasa.gov/eyes/

+ Check out the Ten Years Of the ISS in Pictures feature on-line at UniverseToday.com ... http://tinyurl.com/27nglfh

+ The Daily Mail had a feature showing astronaut Tracy Caldwell Dyson and the views from the ISS Cupola: http://tinyurl.com/38eryox

[ANS thanks everyone for the above information]

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SB SAT @ AMSAT $ANS-325.07
CubeSat Winter Session and IAA Conference in Rome, January 24-29

AMSAT News Service Bulletin 325.07
>From AMSAT HQ SILVER SPRING, MD.
November 21, 2010
To All RADIO AMATEURS
BID: $ANS-325.07

The 1st IAA Conference on University Satellites Missions and Cubesat Conference which will be held in Rome, Italy on January 24-29, 2011. Submissions are due by December 18, 2010. Early registration begins on January 10, 2011.

The conference is organized by a team of professors, students and researchers from the School of Aerospace Engineering of Sapienza University of Roma (GAUSS - Gruppo di Astrodinamica dell'Universit&#65533; degli Studi Sapienza - Group of Astrodynamics of Sapienza University)

The Conference is supported by several authorities including:
+ The International Academy of Astronautics (IAA)
+ The European Space Agency (ESA)

+ Kosmotras)
+ The Von Karman Institute (VKI)
+ The Centro Ricerche Progetto San Marco
+ Sapienza Universit di Roma
+ Morehead State University

Two days of the Conference will be entirely dedicated to the Winter Session of the Cubesat Workshop, for the first time in Europe.

More information can be found at: http://www.gaussteam.com under the section 'events'. An e-mail contact for the conference is: gauss.group@gmail.com

[ANS thanks Group of Astrodynamics, Sapienza University of Roma for the above information]

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In addition to regular membership, AMSAT offers membership in the President's Club. Members of the President's Club, as sustaining donors to AMSAT Project Funds, will be eligible to receive additional benefits. Application forms are available from the AMSAT Office. And, with that please keep in mind the young ham expressing his frustration of his radio battery dying so his therapist recommended that he find an outlet.

73,
This week's ANS Editor,
JoAnne Maenpaa, K9JKM
K9JKM at amsat dot org